平成１８年度　薬学研究科修士課程選抜入学試験問題

科　目　名	問題枚数
英　語	No.1 / 3 枚

受験番号	氏　　名

Ⅰ.

問１　次の記述 A～C）は真核細胞に関する記述である。該当する細胞内構造または小器官を、日本語および英語（略号は不可）で答えなさい。（12 点）

A)　The most conspicuous organelle in the cell, which is separated from the cytoplasm by an envelope consisting of two membranes and holds the entire chromosomal DNA.

（日本語）＿＿＿＿＿＿＿＿　（英語）＿＿＿＿＿＿＿＿＿＿＿＿＿＿

B)　The power plants of all eucaryotic cells, harnessing energy obtained by combining oxygen with food molecules to make ATP.

（日本語）＿＿＿＿＿＿＿＿　（英語）＿＿＿＿＿＿＿＿＿＿＿＿＿＿

C)　Flattened sheets, sacs, and tubes of membrane extend throughout the cytoplasm of eucaryotic cells, enclosing a large intracellular space. It is in structural continuity with the outer membrane of the nuclear envelope, and specializes in the synthesis and transport of lipids and membrane proteins.

（日本語）＿＿＿＿＿＿＿＿　（英語）＿＿＿＿＿＿＿＿＿＿＿＿＿＿

問２　次の薬物 D～K）の英名を下の語句群から選び、その番号を解答欄に記入しなさい。（8 点）

薬物名	解答番号
D）　解毒薬	
E）　抗うつ薬	
F）　抗凝固薬	
G）　抗高血圧薬	
H）　抗生物質	
I）　抗てんかん薬	
J）　鎮痛薬	
K）　麻酔薬	

（語句群）

1. analgesic　2. anesthetic　3. antibiotic　4. anticancer drug
5. anticoagulant　6. antidepressant　7. antidiarrheal　8. antidote
9. antiepileptic drug　10. antihypertensive drug　11. anti-inflammatory drug
12. antipsychotic　13. antipyretic　14. contraceptive
15. digestive　16. gargle　17. hemostat
18. hypnotic　19. laxative　20. sedative

採点	

[　　]

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英　語	No.2 / 3枚		

Ⅱ．次の英文を読んで、各問に答えなさい。（３０点）

Atorvastatin is a selective, competitive inhibitor of HMG-CoA reductase, the rate-limiting enzyme that converts 3-hydroxy-3-methylglutaryl-coenzyme A to mevalonate, a precursor of sterols, including cholesterol. Cholesterol and triglycerides circulate in the bloodstream as part (A) lipoprotein complexes. With ultracentrifugation, these complexes separate (B) HDL, IDL, LDL and VLDL fractions. Triglycerides and cholesterol in the liver are incorporated into VLDL and released into the plasma for delivery to peripheral tissues. LDL is formed from VLDL and is catabolized primarily through the high-affinity LDL receptor. Clinical and pathologic studies show that elevated plasma levels of total cholesterol, LDL-cholesterol, and apolipoprotein B promote human atherosclerosis and ①<u>are risk factors for developing cardiovascular disease</u>, while increased levels of HDL-C are associated (C) a decreased cardiovascular risk.

Atorvastatin is extensively metabolized to ortho- and parahydroxylated derivatives and various beta-oxidation products. *In vitro* inhibition of HMG-CoA reductase by ortho- and parahydroxylated metabolites is equivalent (D) that of atorvastatin. Approximately 70% of circulating inhibitory activity for HMG-CoA reductase is attributed (E) active metabolites. *In vitro* studies suggest the importance of atorvastatin metabolism by cytochrome P450 3A4, consistent with increased plasma concentrations of atorvastatin in humans following coadministration with erythromycin, a known inhibitor of this isozyme. In animals, the ortho-hydroxy metabolite undergoes further glucuronidation.

(Physicians' Desk Reference 59ed.2005 より一部抜粋)

問1. 文中の（　）内に適当と思われる前置詞について下欄に書きなさい。

A（　　）　B（　　）　C（　　）
D（　　）　E（　　）

問2. コレステロールとトリグリセリドは何をすると HDL、IDL、LDL、VLDL に分画されると述べているか、日本語で記しなさい。

問3. 下線部①の主語は何か、日本語で記しなさい。

問4. Atorvastatin（A）と o-hydroxylated derivative（M 1）および p- hydroxylated derivative（M 2）の HMG-CoA 還元酵素阻害作用に関する本文中の記述から、IC_{50} の正しい組合せをア～ウから選びなさい。

解答（　　）

	IC_{50}（ラット肝ミクロソーム）（nM）		
	A	M 1	M 2
ア	13	12	15
イ	13	1	1
ウ	13	91	87

問5. Atorvastatin と erythromycin の併用で何が起こると書かれているか。また、その理由として何が考えられるか。

起こる事象：

理由：

採点	

[　　]

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英　語	No.3 / 3枚		

III. 下記の英文は痛みの存在する理由を議論している。全文を和訳しなさい。（30 点）

It is conceivable that pain (acute pain) may be considered essential for humans to survive as a species; it may be among the crucial perceptions that the brain must evolve for the continued survival of the human organism (e.g., hunger, thrust, and pain). For the organism to perpetuate the species, it must propagate and reproduce. Even much less evolved organisms use sensing mechanisms to strive for environmental comfort and to avoid toxins, stress, irritability, and extremes of temperature. Although it seems that less is known about the requirement for sleep, this too may be one of the essential primal drives or urges. Some scientists believe that some of these perceptions (e.g., hunger/satiety, pain/pleasure) may involve similar regions, neurotransmitters and receptors, and systems in the brain. Research efforts centered on the brain may provide some of the key missing links in unlocking some of the mysteries of pain.

human organism:ヒト生命体
sensing mechanism:感知メカニズム
primal drives or urges:基本的欲求あるいは衝動
satiety:満腹感